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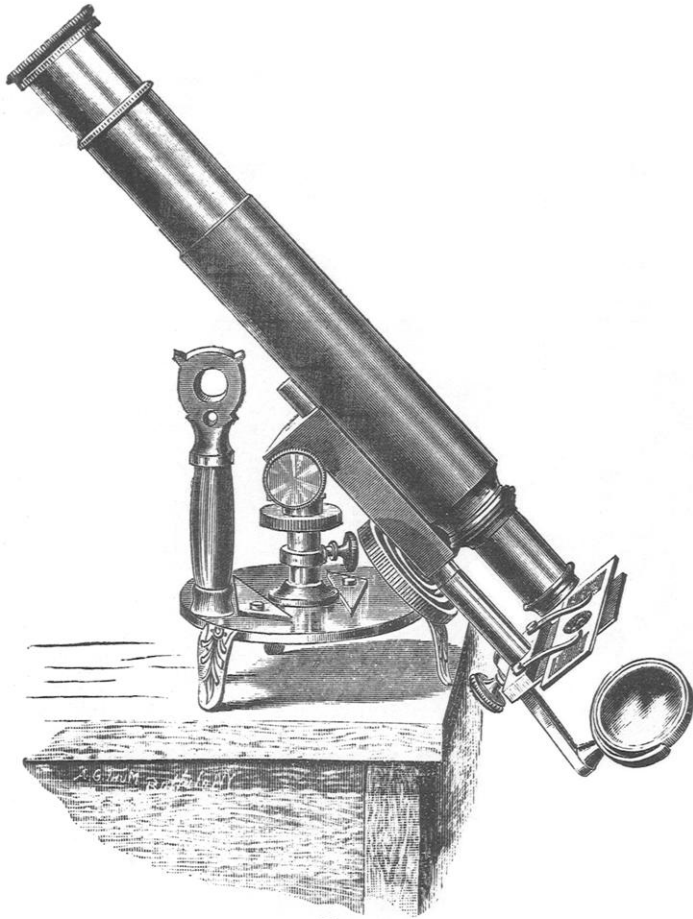
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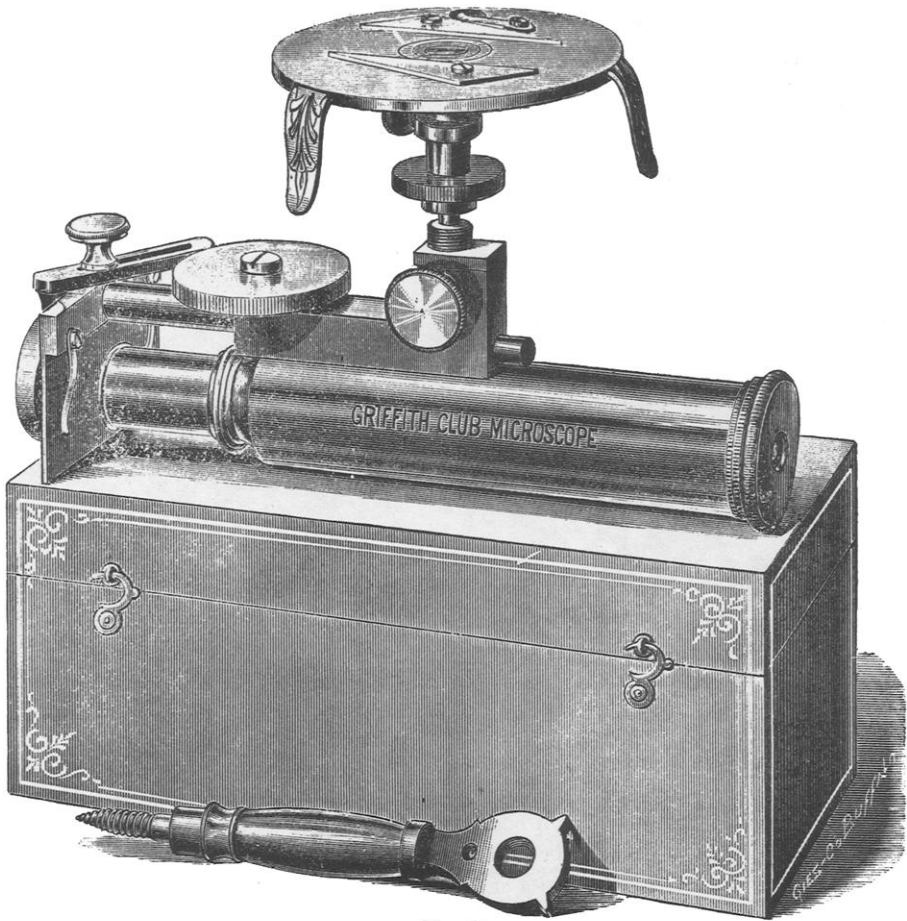


No. 1.

## Description of a New Portable Microscope.

BY. E. H. GRIFFITH.

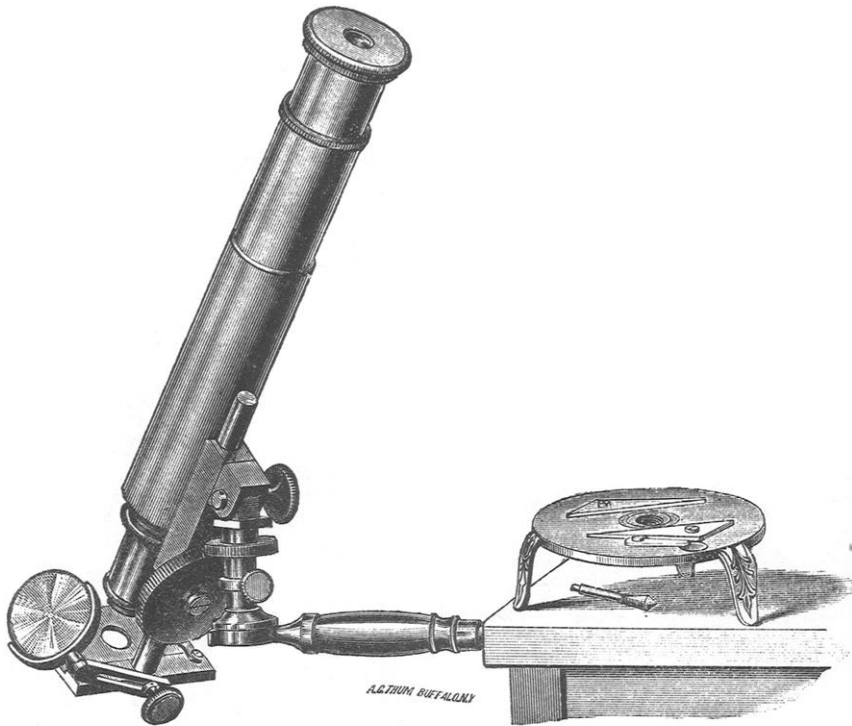
The Griffith Club Microscope is the result of experiments during several years while on the road engaged in commercial pursuits to make a first-class microscope for my own use, which can easily and expeditiously be placed with its accessories, in a small case, and be carried without inconvenience. It received its name in appreciation of the honor conferred upon myself by the Club of Microscopy in Detroit, Michigan, in giving my name to their organization. In order



No. 2.

to make the microscope thoroughly practical, and at the same time very compact, no small expenditure of time and of money has been made in experimenting on nearly every portion of its mechanism, and I claim as original in application to the microscope nearly every part of the stand, with the exception of the tubes. Among its principal features are its fine adjustment, its mirror bar, its turn-table attachment, the nut and screw holder, (Fig. 3), for attaching the microscope or the turn-table to any convenient support; the base of the microscope also a bar to be attached when desired, to hold a taper, converting the instrument into an excellent class microscope.

The tube is  $1\frac{1}{2}$  inches in external diameter, and in connection with a draw-tube and the eye-piece, gives the standard length of ten inches.



No. 3.

The draw-tube has the society screw, allowing the use of a four-inch objective. Attached to the main tube is a rod, which closely fits the groove of a bar which is a portion of the stage support, and by means of the rod and grooved bar the coarse adjustment is effected. At one end of the bar is fastened a small tube, in which is enclosed a coiled spring, and over which is a closely fitting sheath to which the stage is fastened. Under the sheath is a polished steel point, which is made to move in the spiral groove of a fine adjustment wheel that is fastened to the back of the flat grooved bar, (Fig. 1), making a delicate and convenient fine adjustment by means of the long inclined plane which forces the stage of the microscope slowly back or forward as the wheel is turned.

The stage is only about 1-16 inch in thickness, allowing the most oblique illuminations, and to it another plate of equal thickness with sub-stage attachment may be made to fit by grooving the ends of the second plate. The mirror is supported by a bar which is slit nearly its entire length, and which is fastened to the back of the stage by a thumb-screw, allowing the mirror to be placed at any angle above or

below the stage, giving the best illumination for transparent and for opaque objects, also the greatest obliquity for test objects, and allowing the mirror to be placed close to the stage or to one side out of the way when not needed, (Fig. 2.)

At the end of the stage-holder bar farthest from the stage is a clamp in which is fitted a short post, which may be clamped at any angle by means of a set-screw, (Fig. 1.) At the end of this post is a socket in which the spindle of a turn-table may be fastened, and as the front of the stage is made on a plane with the tubes the microscope furnishes a good support for the turn-table, (Fig. 2). The turn-table plate is furnished with three feet, out of the way, and when desired it can quickly be unscrewed from its sheath, turned over and again attached to it, the spindle removed and the sheath screwed to the end of the post in the clamp, and an excellent base for the microscope is attached, (Fig. 1.)

Belonging to the microscope is a bar with a nut at one end and a fine-pointed screw at the other, which may be used to fasten the microscope securely to a table (Fig. 1) or other support, by passing the screw end through a hole made near the side of the turn-table plate, or if a perpendicular position of the microscope tube be desired the screw, clamp and the standard supporting the tube may exchange places, putting the standard at the side and the screw in the center. The base of the microscope may be entirely dispensed with by substituting the screw-holder, (as in Fig. 3,) fastening it to a table, window casing, the unfinished portion of a drawer, or other support. The turn-table may be supported in the same way. The entire stand is of brass heavily nickel-plated, and much credit is due the manufacturers for the superior workmanship in its construction. When not needed as a portable microscope it may be kept always ready for use as in Fig. 1, and when it is to be carried it may be packed in a box about six inches long, four inches wide and three inches deep.